

### REMARKS

Applicants appreciate the Examiner's thorough examination of the present application and withdrawal of the previous prior art rejections and withdrawal of the rejection of Claims 24, 26-29, and 31-33 under 35 U.S.C. 101. Applicants have carefully examined the cited references and have amended Claims 1, 3-5, 7-13, 21-24, 26-28, 32-34, 37, 38, 40, and 41 to clarify that they are directed to managing network communication Quality of Service (QoS) in a communication network. By this Amendment, Claims 6 and 36 have been canceled. Applicants request reconsideration and allowance in view of the above amendments and the following remarks.

#### **Status of the Claims:**

Claims 1, 3-7, 13, 14, 21, 34, 36-38, 40, and 41 stand rejected under 35 U.S.C. 102(e) as anticipated by U.S. Patent Publ. No. 2005/0160429 to Hameleers et al. ("Hameleers"). Claims 8-10 and 12 stand rejected under 35 U.S.C. 103(a) as unpatentable over Hameleers in view of U.S. Patent Publ. No. 2003/0152028 to Raisanen et al. ("Raisanen"). Claim 11 stands rejected under 35 U.S.C. 103(a) as unpatentable over Hameleers in view of U.S. Pat. No. 6,628,610 to Waclawsky et al. ("Waclawsky"). Claims 15 and 16 stand rejected under 35 U.S.C. 103(a) as unpatentable over Hameleers in view of U.S. Pat. No. 6,999,474 to Goyal et al. ("Goyal"). Claims 17-20 stand rejected under 35 U.S.C. 103(a) as unpatentable over Hameleers in view of U.S. Patent Publ. No. 2004/0095914 to Katsube et al. ("Katsube").

#### **Amended Independent Claims 1, 24, 34, 40, and 41 are Not Anticipated by Hameleers:**

According to exemplary embodiments, a network communication QoS level is requested for each of a plurality of applications of a service provider, a network communication QoS level is allocated to individual ones of the applications in response to the QoS requests, and network communication QoS levels allocated to the respective individual applications are used to manage network communication QoS that is provided to network communications by the individual applications of the service provider. Each of the applications may thereby request and/or be allocated different network communication QoS levels for communications across the communication network.

For example, amended Claim 1 recites:

1. A method of managing Quality of Service (QoS) in a communication network, the method comprising:  
for each of a plurality of applications of a service provider which will communicate across the communication network, requesting a level of network communication QoS using QoS requests from the service provider;  
allocating levels of network communication QoS to individual ones of the applications of the service provider in response to the QoS requests; and  
managing network communication QoS that is provided to network communications by the individual applications of the service provider in response to the network communication QoS levels allocated to the respective individual applications.

In rejecting previously presented Claim 1, the Final Office Action cites paragraphs 0011 and 0012 of Hameleers. Applicants have added emphasis to the cited paragraphs below to highlight that Hameleers is directed to *deciding where to allocate applications for processing by a server based on the server's available processing capacity and the applications' required processing capacities*, and is not directed to *management of network communication QoS for a communication network*.

Hameleers paragraphs 0011 and 0012 recite:

[0011] For carrying out the proposed method, at least the following steps are executed: first of all, a determination of a required **processing capacity** for processing at least one of the first server application and the further server application is executed. The required processing capacity is the **processing capacity** required or expected to be required by the first server application or the further server application, e.g. for providing optimum **processing** of the respective server application or if one of the server applications being not on one of the server platforms is requested on that one server platform. The required **processing capacities** of both server applications may also be determined. The required **processing capacity** can range from zero and may even exceed the maximum processing capacity, e.g. in peak situations. The required **processing capacity** may be indicated by the server applications or the server platforms.

[0012] An analysis of the required **processing capacity** for an assignment of the capacity fraction to the first server application is executed. The main objective of the analysis is to verify if and for what conditions and circumstances the requirement can be satisfied. In the analysis it may be checked to which of the server applications the determined required **processing capacity** is related, e.g. whether the required **processing capacity** relates to the first server application or the further server application or to both server applications. If the required **processing capacity** is related only to the first server application, it may be necessary to request the required

processing capacity of the further server application or vice versa. ... It may be analyzed if an *assignment of the capacity fraction to the first server application* has consequences for the processing of the further server application. If the capacity fraction for the first server application is increased, an improved QoS for the first server application at the expense of a reduced QoS for the further server application may be a possible consequence. If the capacity fraction is decreased e.g. because of a lower required processing capacity for the first server application, more processing capacity exists for the further server application improving QoS for the further server application. In the analysis, the capacity fraction for the first server application is determined, e.g. by determining a value for the capacity fraction. ...

Accordingly, Hameleers describes in paragraphs 0011 and 0012 that when determining whether or not to assign an application to a server, the processing QoS provided by the server to hosted applications can be improved by making the determination in response to a comparison of the application's required processing capacity to the server's available processing capacity. Hameleers specifically defines its use of "processing capacity" as meaning "a maximum processing capacity usable for processing one or more server applications on the server platform [and includes] a maximum number of computing steps per time unit" of the processor in the server. (Hameleers, para. 0004). Consequently, Hameleers is concerned with and describes management of the allocation of applications to a server's processor based on the server's available processing capacity.

Hameleers is not concerned with and does not recognize the need to manage QoS in a communication network or, much less, to manage network communication QoS that is provided to *network communications by individual applications* of a service provider. Moreover, Hameleers does not describe or suggest any of the following three paragraphs of amended Claim 1:

- 1) for each of a plurality of applications of a service provider which will communicate across the communication network, requesting a level of network communication QoS using QoS requests from the service provider;
- 2) allocating levels of network communication QoS to individual ones of the applications of the service provider in response to the QoS requests; or
- 3) managing network communication QoS that is provided to network communications by the individual applications of the service provider in response to

the network communication QoS levels allocated to the respective individual applications.

Applicants therefore submit that Hameleers does not describe or suggest each and every recitation of amended Claim 1, and therefore submit that Hameleers cannot anticipate amended Claim 1.

Amended independent claims 24 and 34 contain similar recitations to Claim 1 and are submitted to not be anticipated by Hameleers for substantially the same reasons as Claim 1.

Amended independent Claim 40 is similar to Claim 1, but recites that a different network communication QoS level is allocated to each one of a plurality of applications of a service provider. As explained above, Hameleers describes management of server processing capacity, not management of network communication QoS. Hameleers does not describe or suggest that network communication QoS levels are requested for a plurality of applications on a server, or that different levels of network communication QoS are allocated to different individual applications on a server. Applicants therefore submit that Hameleers does not describe or suggest the recitations of amended Claim 40, and therefore submit that Hameleers cannot anticipate amended Claim 40.

Amended independent Claim 41 is similar to Claim 1, but recites that a different network communication QoS level is allocated to each one of a plurality of IP addresses associated with different applications of a service provider. Hameleers does not describe or suggest that network communication QoS levels are requested for a plurality of applications on a server, or that different levels of network communication QoS are allocated to different IP addresses associated with different applications of a server. Applicants therefore submit that Hameleers does not describe or suggest the recitations of amended Claim 41, and therefore submit that Hameleers cannot anticipate amended Claim 41.

Allowance of amended Claims 1, 24, 34, 40, and 41 is respectfully requested.

The dependent claims are submitted to be patentable at least based on the patentability of the independent claims from which they depend. Moreover, Applicants submit that the dependent claims provide independent bases for patentability for at least the reasons explained below.

**Dependent Claims 3-5, 7, 13, 14, 21, 37, and 38 are Not Anticipated by Hameleers:**

Amended Claim 3 is further directed to how each of the applications can request and be allocated differing network communication QoS levels. In particular, Claim 3 recites that a plurality of network communication QoS requests are generated, where each of the network communication QoS requests is for a different one the plurality of applications of the service provider. As explained above, Hameleers does not describe or suggest that network communication QoS levels are requested for a plurality of applications on a service provider or, much less, that network communication QoS requests can be generated for each of a plurality of individual applications on a service provider. Consequently, Applicants submit that Hameleers does not anticipate amended Claim 3, and therefore request allowance thereof.

Amended Claim 4 adds to Claim 3 by further reciting that a network communication QoS level is allocated to a particular one of the service provider applications in response to a QoS request from the particular application. Neither in paragraph 0014, nor elsewhere, does Hameleers describe or suggest that a network communication QoS level is allocated to a particular application among a plurality of applications on a server in response to a QoS request from the particular application. Consequently, Applicants submit that Hameleers does not anticipate amended Claim 4, and therefore request allowance thereof.

Amended Claim 5 adds to Claim 3 by further reciting that a network capacity level is allocated for communications by a particular one of the applications of the service provider in response to a QoS request from the particular application, and that network communications by the particular one of applications of the service provider are constrained to the allocated network capacity level. Neither in paragraph 0012, nor elsewhere, does Hameleers describe or suggest that a network capacity level is allocated for communications by a particular application among a plurality of applications on a server in response to a QoS request for the particular application, or that network communications are constrained to such an allocated network capacity level. Consequently, Applicants submit that Hameleers does not anticipate amended Claim 5, and therefore request allowance thereof.

Claim 26 contains similar recitations to amended Claim 5 and is submitted to not be anticipated by Hameleers for at least the reasons explained for Claim 5.

Amended Claim 7 recites that a communication priority level for communications through the communication network by a particular one of the applications of the service provider is allocated in response to a QoS request for the particular application, and that network communications by the particular one of applications are prioritized in response to the allocated network communication priority level. In sharp contrast, Hameleers is concerned with managing server processing capacity, and does not teach or suggest managing network communication QoS or, much less, prioritizing network communications by particular application in response to an allocated network communication priority level.

Claim 37 contains similar recitations to amended Claim 7 and is submitted to not be anticipated by Hameleers for at least the reasons explained for Claim 7.

Amended Claim 21 recites that allocation of the requested network communication QoS level includes notifying a broadband remote access server of the network communication QoS levels allocated to particular applications of the service provider. Neither in paragraphs 0028 and 0029, nor elsewhere, does Hameleers describe or suggest that a broadband remote access server is notified of network communication QoS levels allocated to particular applications of a service provider. Consequently, Applicants submit that Hameleers does not anticipate amended Claim 21, and therefore request allowance thereof.

Claims 32 and 38 contain similar recitations to Claim 21 and are submitted to not be anticipated by Hameleers for at least the reasons explained for Claim 21.

Amended Claim 22 recites that allocation of the requested QoS level includes notifying a routing gateway of the network communication QoS levels allocated to particular applications of the service provider. Neither in paragraphs 0028 and 0029, nor elsewhere, does Hameleers disclose the recitations of Claim 22. Consequently, Applicants submit that Hameleers does not anticipate amended Claim 22, and therefore request allowance thereof.

Claim 33 contains similar recitations to Claim 22 and is submitted to not be anticipated by Hameleers for at least the reasons explained for Claim 22.

Amended Claim 23 recites that the individual applications are notified of their allocated network communication QoS levels. Neither the cited paragraph 0012, nor elsewhere, does Hameleers describe or suggest that individual applications on a server can request various network communication QoS levels or that the individual applications can be

notified of their allocated network communication QoS levels. Consequently, Applicants submit that Hameleers does not anticipate amended Claim 23, and therefore request allowance thereof.

**Dependent Claims 8-10 and 12 are Patentable over Hameleers in view of Raisanen:**

Amended Claim 8 recites that an allowed information delay level for communications through the communication network is allocated to a particular one of the applications of the service provider in response to a network communication QoS request for the particular application, and that network communications by the particular one of applications of the service provider are managed in response to the allocated allowed information delay level. The Final Office Action concedes that Hameleers does not disclose these recitations of Claim 8, however, it contends that Raisanen supplies the missing teaching. However, as described in detail in Applicants' Amendment dated July 23, 2007, Raisanen describes that QoS levels are requested for an entire communication terminal, and that the requested QoS level is either allocated or denied for the entire communication terminal. (e.g., See Raisanen, paragraph 0064). Raisanen does not describe or suggest that an allowed information delay level for communications through a communication network can be allocated to a particular one of a plurality of applications on a communication terminal in response to a network communication QoS request for the particular application, and does not describe or suggest that network communications by a particular application of a service provider is managed in response to an allocated allowed information delay level. Consequently, Applicants submit that Claim 8 is patentable over Hameleers in view of Raisanen, and therefore request allowance thereof.

Amended Claim 9 recites that an allowed information loss rate for communications through the communication network is allocated to a particular one of the applications of the service provider in response to a QoS request for the particular application, and that network communications by the particular application of the service provider are managed in response to the allocated allowed information loss rate. The Final Office Action concedes that Hameleers does not disclose these recitations of Claim 9, however, it contends that Raisanen supplies the missing teaching. However, as described in detail in Applicants' Amendment

dated July 23, 2007, Raisanen describes that QoS levels are requested for an entire communication terminal, and that the requested QoS level is either allocated or denied for the entire communication terminal. (e.g., See Raisanen, paragraph 0064). Raisanen does not describe or suggest that an allowed information loss rate for communications through a communication network can be allocated to a particular one of a plurality of applications on a communication terminal in response to a QoS request for the particular application, or that network communications by a particular application of a service provider are managed in response to an allocated allowed information loss rate. Consequently, Applicants submit that Claim 9 is patentable over Hameleers in view of Raisanen, and therefore request allowance thereof.

Amended Claim 10 recites that an allowed packet size for communications through the communication network is allocated to a particular one of the applications of the service provider in response to a QoS request for the particular application, and that network communications by the particular application of the service provider are constrained in response to the allocated allowed packet size. The Final Office Action concedes that Hameleers does not disclose these recitations of Claim 10, however, it contends that Raisanen supplies the missing teaching. However, Raisanen does not describe or suggest that an allowed packet size for communications through a communication network can be allocated to a particular one of a plurality of applications on a communication terminal in response to a QoS request for the particular application, or that network communications by a particular application of a service provider are constrained in response to an allocated allowed packet size. Consequently, Applicants submit that Claim 10 is patentable over Hameleers in view of Raisanen, and therefore request allowance thereof.

**Dependent Claim 11 is Patentable over Hameleers in view of Waclawsky:**

Amended Claim 11 recites that a Maximum Transmission Unit size for communications through the communication network is allocated to a particular one of the applications of the service provider in response to a network communication QoS request for the particular application, and that network communications by the particular one of applications of the service provider are constrained in response to the allocated Maximum



Transmission Unit size. The Final Office Action concedes that Hameleers does not disclose these recitations of Claim 11, however, it contends that Waclawsky supplies the missing teaching. Although Waclawsky describes regulation of maximum transmission unit size for data packets, Waclawsky does not describe or suggest that an Maximum Transmission Unit size can be allocated to a particular one of a plurality of applications on a service provider in response to a network communication QoS request for the particular application, and does not describe or suggest that network communications by the particular application of a service provider are *constrained in response to an allocated Maximum Transmission Unit size*. Consequently, Applicants submit that Claim 11 is patentable over Hameleers in view of Waclawsky, and therefore request allowance thereof.

**Dependent Claims 17-20 are Patentable over Hameleers in view of Katsube:**

Claim 17 recites, *inter alia*, that the QoS request for an application on the service provider is evaluated based on information in a known field in the data packet. Although the Office Action concedes that Hameleers does not describe the features of Claim 17, it contends that Katsube discloses these features. Although Katsube describes that QoS information for a particular message can be contained in the message header, it does not describe or suggest that a QoS request *for a particular application on a service provider* is evaluated or that such evaluation can be done based on a QoS request within a known field of a data packet. Consequently, Applicants submit that Claim 17 and Claims 18-20 which depend therefrom are patentable over Hameleers in view of Katsube. Moreover, Applicants submit that Claims 18-20 provide further independent bases for patentability as they define further patentable features for how a QoS request *for a particular application on the service provider* is embedded within a data packet and evaluated, none of which is disclosed by Hameleers and Katsube.

**CONCLUSION**

In view of the above amendments and remarks, Applicants respectfully request withdrawal of all objections and rejections and the allowance of all claims in due course. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of

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this matter, the Examiner is encouraged to contact the undersigned by telephone at (919) 854-1400.

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